Fr. C. G. Muller (" Zeitschrift d. Ver. Deutsch-Ing.," 1879, p. 493, and also Wedding, p. 476) bored solid metal under water, and found thereby that not inconsiderable quantities of gas escape. Some of the results found are set out here.

Class of iron.	Amount Gas Volume.	Composition.		
		H.	N.	CO.
	Per c«mt.	Pei-cent.	Per cent.	Per cent.
Bessemer steel before spiegel addition .	60-0	88-8	10-5	0-7
The same „	44-0	80-0	17-9	1-3
Bessemer rail ingot iron	45-0	77-0	23-0	o-o
The same	51-0	78-1	20-7	0-9
The same forged out	5-0	52-2	48-1	o-o
Open-hearth ingot iron before adding spiegel	25-0	67-0	30-8	2-2
Thomas process ingot iron without added ITeMn	20-0	64*5	35-4	o-o
Thomas process ingot iron with added ITeMn and EeSi	22-0	86-4	12-7	0-4
Thomas process ingot iron with added FeSi	6-0	54-7	45-3	0-0

Boudouard (" Stahl und Eisen," 1907, p. 451) found that turnings at high temperature under exhaustion can contain much greater amounts of gas, and actually up to ten times the volume of the metal, and ascertained the composition of this gas to be
H 50-4 per cent., CO 34-2 per cent., C02 9*9 per cent, N 4*1 per cent.

One sees that in the gases which escape during casting, carbon monoxide forms the chief constituent, whilst the gases which are retained by the solidified metal consist principally of hydrogen, and contain only very little carbon monoxide.

It appears now not inopportune to differentiate between the gases which are dissolved in the metal and such as are only mechanically retained. In respect of the former, it is probable that no means are at disposal to essentially influence their amount, .whilst metal manufactured wholly in the converter,